

Figure J-36. Highway and rail routes used to analyze transportation impacts - Connecticut, Rhode Island, and New York.

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Table J-77. Estimated transportation impacts for the States of Delaware, Maryland, Virginia, West Virginia, and the District of Columbia (page 1 of 3).

				Mostl	y rail				
	Mostly legal-weight	Ending rail node in Nevada ^a							
Impact category	truck	Caliente ^b	Dry Lake ^c	Jean ^d	Beowawe ^e	Eccles ^f	Apex ^g		
DELAWARE									
Shipments									
Truck (originating/total)	0/1,077	0/0	0/0	0/0	0/0	0/0	0/0		
Rail (originating/total)	0/0	0/0	0/0	0/0	0/0	0/0	0/0		
Radiological impacts									
Incident-free impacts									
Population (person-rem/LCFs) ^h	1.6×10 ⁰ /8.2×10 ⁻⁴	$0.0 \times 10^{0} / 0.0 \times 10^{0}$							
Workers (person-rem/LCFs)	$1.7 \times 10^{0} / 6.9 \times 10^{-4}$	$0.0 \times 10^{0} / 0.0 \times 10^{0}$							
Accident dose risk	4 7	0 0	0 0	0 0	0 0	0 0	0 0		
Population (person-rem/LCFs)	$5.2\times10^{-4}/2.6\times10^{-7}$	$0.0 \times 10^{0} / 0.0 \times 10^{0}$							
Nonradiological impacts	5 4 404	0.0.400	0.0.400	0.0.400	0.0.400	0.0.400	0.0.400		
Vehicle emissions (LCFs)	6.4×10^{-4} 3.1×10^{-4}	0.0×10^{0} 0.0×10^{0}							
Fatalities	3.1×10	0.0×10°	0.0×10°	0.0×10°	0.0×10°	0.0×10°	0.0×10°		
MARYLAND									
Shipments									
Truck (originating/total)	867/1,944	0/0	0/0	0/0	0/0	0/0	0/0		
Rail (originating/total)	0/0	169/312	169/312	169/312	169/312	169/312	169/312		
Radiological impacts									
Incident-free impacts									
Population (person-rem/LCFs) ^h	$2.5 \times 10^{1} / 1.3 \times 10^{-2}$	$1.0 \times 10^{1} / 5.0 \times 10^{-3}$							
Workers (person-rem/LCFs)	$4.8 \times 10^{1} / 1.9 \times 10^{-2}$	$1.3 \times 10^{1} / 5.1 \times 10^{-2}$	$1.3 \times 10^{1} / 5.1 \times 10^{-2}$	$1.3 \times 10^{1} / 5.1 \times 10^{-2}$	$1.3 \times 10^{1} / 5.1 \times 10^{-2}$	$1.3 \times 10^{1} / 5.1 \times 10^{-2}$	$1.3 \times 10^{1} / 5.1 \times 10^{-2}$		
Accident dose risk	6.6×10 ⁻³ /3.3×10 ⁻⁶	3.2×10 ⁻³ /1.6×10 ⁻⁶	3.2×10 ⁻³ /1.6×10 ⁻⁶	3.2×10 ⁻³ /1.6×10 ⁻⁶	3.2×10 ⁻³ /1.6×10 ⁻⁶	3.2×10 ⁻³ /1.6×10 ⁻⁶	3.2×10 ⁻³ /1.6×10 ⁻⁶		
Population (person-rem/LCFs)	0.0X1U 1/3.3X10 °	3.2×10 /1.6×10 °	3.2×10 /1.6×10 °	3.2×10 71.0×10 °	5.2×10 /1.6×10 °	3.2×10 /1.6×10 °	5.2×10 /1.6×10		
Nonradiological impacts Vehicle emissions (LCFs)	8.4×10 ⁻³	3.8×10 ⁻³	3.8×10 ⁻³	3.8×10 ⁻³	3.8×10 ⁻³	3.8×10 ⁻³	3.8×10 ⁻³		
Fatalities	8.4×10 0.007	0.007	0.007	0.007	0.007	0.007	0.007		
1 atantics	0.007	0.007	0.007	0.007	0.007	0.007	0.007		

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Table J-77. Estimated transportation impacts for the States of Delaware, Maryland, Virginia, West Virginia, and the District of Columbia (page 2 of 3).

				Mo	ostly rail				
	Mostly legal-weight	Ending rail node in Nevada ^a							
Impact category	truck	Caliente ^b	Dry Lake ^c	Jean ^d	Beowawe ^e	Eccles ^f	Apex ^g		
VIRGINIA									
Shipments									
Truck (originating/total)	1,538/3,409	0/0	0/0	0/0	0/0	0/0	0/0		
Rail (originating/total)	0/0	340/340	340/340	340/340	340/340	340/340	340/340		
Radiological impacts									
Incident-free impacts		0 2		0. 2	0 2		0 2		
Population (person-rem/LCFs)h	$2.2 \times 10^{1} / 1.1 \times 10^{-2}$	$9.6 \times 10^{0} / 4.8 \times 10^{-3}$	9.6×10 ⁰ /4.8×10 ⁻³	9.6×10 ⁰ /4.8×10 ⁻³	$9.6 \times 10^{0} / 4.8 \times 10^{-3}$	$9.6 \times 10^{0} / 4.8 \times 10^{-3}$	9.6×10 ⁰ /4.8×10 ⁻³		
Workers (person-rem/LCFs)	$8.2 \times 10^{1} / 3.3 \times 10^{-2}$	$2.6 \times 10^{1} / 1.0 \times 10^{-2}$							
Accident dose risk	24 40-344 4 40-6	21 1034 0 106	21 10-34 0 10-6	24 40344 0 40-6	24 4034 0 406	2 1 10311 0 10-6	2 1 10-344 0 10-6		
Population (person-rem/LCFs)	$2.1\times10^{-3}/1.1\times10^{-6}$	$2.1 \times 10^{-3} / 1.0 \times 10^{-6}$	2.1×10 ⁻⁷ /1.0×10 ⁻⁹	$2.1 \times 10^{-3} / 1.0 \times 10^{-6}$					
Nonradiological impacts Vehicle emissions (LCFs)	3.4×10^{-3}	2.8×10 ⁻³							
Fatalities	0.027	0.011	0.011	0.011	0.011	0.011	0.011		
	0.027	0.011	0.011	0.011	0.011	0.011	0.011		
WEST VIRGINIA									
Shipments									
Truck (originating/total)	0/3,409	0/0	0/0	0/0	0/0	0/0	0/0		
Rail (originating/total)	0/0	0/509	0/509	0/509	0/509	0/509	0/509		
Radiological impacts									
Incident-free impacts	$3.4\times10^{1}/1.7\times10^{-2}$	1.6×10 ⁰ /8.1×10 ⁻⁴							
Population (person-rem/LCFs) ^h Workers (person-rem/LCFs)	$6.2 \times 10^{1} / 2.5 \times 10^{-2}$	$6.6 \times 10^{0} / 2.6 \times 10^{-3}$							
Accident dose risk	0.2X10 /2.3X10	0.0X10 /2.0X10	0.0X10 /2.0X10	0.0×10 /2.0×10	0.0X10 /2.0X10	0.0X10 /2.0X10	0.0×10/2.0×10		
Population (person-rem/LCFs)	1.8×10 ⁻³ /9.2×10 ⁻⁷	3.9×10 ⁻⁴ /2.0×10 ⁻⁷							
Nonradiological impacts	1.0^10 /9.2^10	5.7510 /2.0510	5.7010 /2.0010	5.7510 /2.0510	5.5010 /2.0010	3.7510 72.0510	5.7810 72.0810		
Vehicle emissions (LCFs)	6.9×10 ⁻³	8.5×10 ⁻⁴							
Fatalities	0.032	0.004	0.004	0.004	0.004	0.004	0.004		

Table J-77. Estimated transportation impacts for the States of Delaware, Maryland, Virginia, West Virginia, and the District of Columbia (page 3 of 3).

		Mostly rail							
	Mostly legal-weight	Ending rail node in Nevada ^a							
Impact category	truck	Caliente ^b	Dry Lake ^c	Jean ^d	Beowawe ^e	Eccles ^f	Apex ^g		
DISTRICT OF COLUMBIA									
Shipments									
Truck (originating/total)	0/0	0/0	0/0	0/0	0/0	0/0	0/0		
Rail (originating/total)	0/0	0/312	0/312	0/312	0/312	0/312	0/312		
Radiological impacts									
Incident-free impacts									
Population (person-rem/LCFs) ^h	$0.0 \times 10^{0} / 0.0 \times 10^{0}$	$2.7 \times 10^{0} / 1.3 \times 10^{-3}$							
Workers (person-rem/LCFs)	$0.0 \times 10^{0} / 0.0 \times 10^{0}$	$5.9 \times 10^{-1} / 2.4 \times 10^{-4}$							
Accident dose risk									
Population (person-rem/LCFs)	$0.0 \times 10^{0} / 0.0 \times 10^{0}$	$5.0 \times 10^{-2} / 2.5 \times 10^{-5}$	$5.0 \times 10^{-2} / 2.5 \times 10^{-5}$	$5.0 \times 10^{-2} / 2.5 \times 10^{-5}$	$5.0\times10^{-2}/2.5\times10^{-5}$	$5.0 \times 10^{-2} / 2.5 \times 10^{-5}$	$5.0 \times 10^{-2} / 2.5 \times 10^{-5}$		
Nonradiological impacts									
Vehicle emissions (LCFs)	0.0×10^{0}	1.2×10 ⁻³	1.2×10 ⁻³	1.2×10 ⁻³	1.2×10^{-3}	1.2×10 ⁻³	1.2×10 ⁻³		
Fatalities	0.0×10^{0}	4.8×10^{-3}							

- a. Under the mostly rail scenario, rail shipments would arrive in Nevada at one of six existing rail nodes. Impacts would vary according to the node. From that node, DOE would use one of the rail or heavy-haul implementing alternatives to complete the transportation to Yucca Mountain (see Section J.1.2).
- b. For heavy-haul truck transportation, the Caliente junction is the location of the proposed Caliente intermodal transfer station for heavy-haul trucks near the town of Caliente in eastern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on one of the Caliente, Caliente/Chalk Mountain, or Caliente/Las Vegas routes. For branch rail line transportation, railcars would transfer via the Caliente Option to the Caliente Corridor at the Caliente iunction.
- c. For heavy-haul truck transportation, the Dry Lake junction is near the location of the proposed Apex/Dry Lake intermodal transfer station for heavy-haul trucks in southeast Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Apex/Dry Lake route.
- d. For heavy-haul truck transportation, the Jean junction is near the location of the proposed Sloan/Jean intermodal transfer station for heavy-haul trucks in southern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Sloan/Jean route. For branch rail line transportation, railcars would transfer from the mainline railroad via the Wilson Pass or Stateline Pass Option of the Jean Corridor, near the Jean junction.
- e. For branch rail line transportation, railcars would transfer from the mainline railroad at the Beowawe junction in north-central Nevada to the Carlin Corridor.
- f. For branch rail line transportation, railcars would transfer from the mainline railroad at the Eccles junction east of Caliente, Nevada, via the Eccles Option or nearby via the Crestline Option of the Caliente or Caliente-Chalk Mountain Corridor. Impacts in states outside Nevada would be the same for the Eccles and Crestline Options of the Caliente and Caliente-Chalk Mountain Corridors.
- g. For branch rail line transportation, railcars would transfer from the mainline railroad at the Apex junction in southeast Nevada, possibly via the Valley Connection, to the Valley Modified Corridor.
- h. LCF = latent cancer fatality.

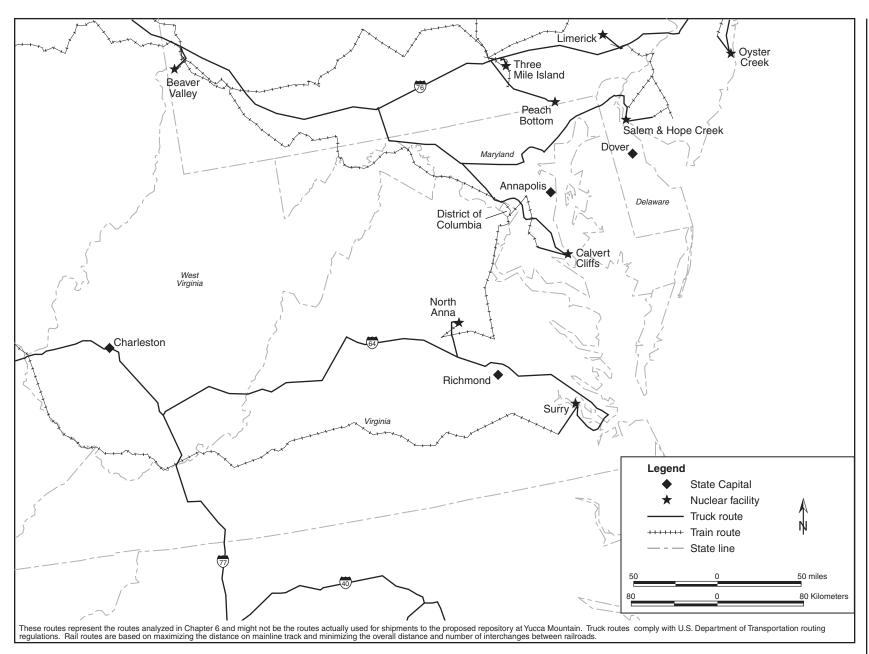


Figure J-37. Highway and rail routes used to analyze transportation impacts - Delaware, Maryland, Virginia, West Virginia, and the District of Columbia.

Table J-78. Estimated transportation impacts for the State of Florida.

		Mostly rail								
	Mostly legal-weight									
Impact category	truck	Caliente ^b	Dry Lake ^c	Jean ^d	Beowawe ^e	Eccles ^f	Apex ^g			
FLORIDA										
Shipments										
Truck (originating/total)	1,666/2,359	491/491	491/491	491/491	491/491	491/491	491/491			
Rail (originating/total)	0/0	202/202	202/202	202/202	202/202	202/202	202/202			
Radiological impacts										
Incident-free impacts										
Population (person-rem/LCFs)h	$4.5 \times 10^{1}/2.2 \times 10^{-2}$	2.3×10 ¹ /1.2×10 ⁻²	2.3×10 ¹ /1.2×10 ⁻²	$2.8 \times 10^{1} / 1.4 \times 10^{-2}$	$2.3\times10^{1}/1.2\times10^{-2}$	2.3×10 ¹ /1.2×10 ⁻²	$2.3\times10^{1}/1.2\times10^{-2}$			
Workers (person-rem/LCFs)	$1.1 \times 10^{2} / 4.3 \times 10^{-2}$	4.2×10 ¹ /1.7×10 ⁻²	$4.2 \times 10^{1} / 1.7 \times 10^{-2}$	$5.0 \times 10^{1} / 2.0 \times 10^{-2}$	$4.2 \times 10^{1} / 1.7 \times 10^{-2}$	$4.2 \times 10^{1} / 1.7 \times 10^{-2}$	$4.2 \times 10^{1} / 1.7 \times 10^{-2}$			
Accident dose risk										
Population (person-rem/LCFs)	$1.5 \times 10^{-3} / 7.4 \times 10^{-7}$	$7.4 \times 10^{-3} / 3.7 \times 10^{-6}$	7.4×10 ⁻³ /3.7×10 ⁻⁶	$9.9 \times 10^{-3} / 5.0 \times 10^{-6}$	$7.4 \times 10^{-3} / 3.7 \times 10^{-6}$	$7.4 \times 10^{-3} / 3.7 \times 10^{-6}$	7.4×10 ⁻³ /3.7×10 ⁻⁶			
Nonradiological impacts										
Vehicle emissions (LCFs)	1.4×10^{-2}	8.2×10^{-3}	8.2×10 ⁻³	1.1×10 ⁻²	8.2×10 ⁻³	8.2×10^{-3}	8.2×10 ⁻³			
Fatalities	0.019	0.025	0.025	0.047	0.025	0.025	0.025			

- a. Under the mostly rail scenario, rail shipments would arrive in Nevada at one of six existing rail nodes. Impacts would vary according to the node. From that node, DOE would use one of the rail or heavy-haul implementing alternatives to complete the transportation to Yucca Mountain (see Section J.1.2).
- b. For heavy-haul truck transportation, the Caliente junction is the location of the proposed Caliente intermodal transfer station for heavy-haul trucks near the town of Caliente in eastern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on one of the Caliente, Caliente/Chalk Mountain, or Caliente/Las Vegas routes. For branch rail line transportation, railcars would transfer via the Caliente Option to the Caliente Corridor at the Caliente junction.
- c. For heavy-haul truck transportation, the Dry Lake junction is near the location of the proposed Apex/Dry Lake intermodal transfer station for heavy-haul trucks in southeast Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Apex/Dry Lake route.
- d. For heavy-haul truck transportation, the Jean junction is near the location of the proposed Sloan/Jean intermodal transfer station for heavy-haul trucks in southern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Sloan/Jean route. For branch rail line transportation, railcars would transfer from the mainline railroad via the Wilson Pass or Stateline Pass Option of the Jean Corridor, near the Jean junction.
- e. For branch rail line transportation, railcars would transfer from the mainline railroad at the Beowawe junction in north-central Nevada to the Carlin Corridor.
- f. For branch rail line transportation, railcars would transfer from the mainline railroad at the Eccles junction east of Caliente, Nevada, via the Eccles Option or nearby via the Crestline Option of the Caliente or Caliente-Chalk Mountain Corridor. Impacts in states outside Nevada would be the same for the Eccles and Crestline Options of the Caliente and Caliente-Chalk Mountain Corridors.
- g. For branch rail line transportation, railcars would transfer from the mainline railroad at the Apex junction in southeast Nevada, possibly via the Valley Connection, to the Valley Modified Corridor.
- h. LCF = latent cancer fatality.

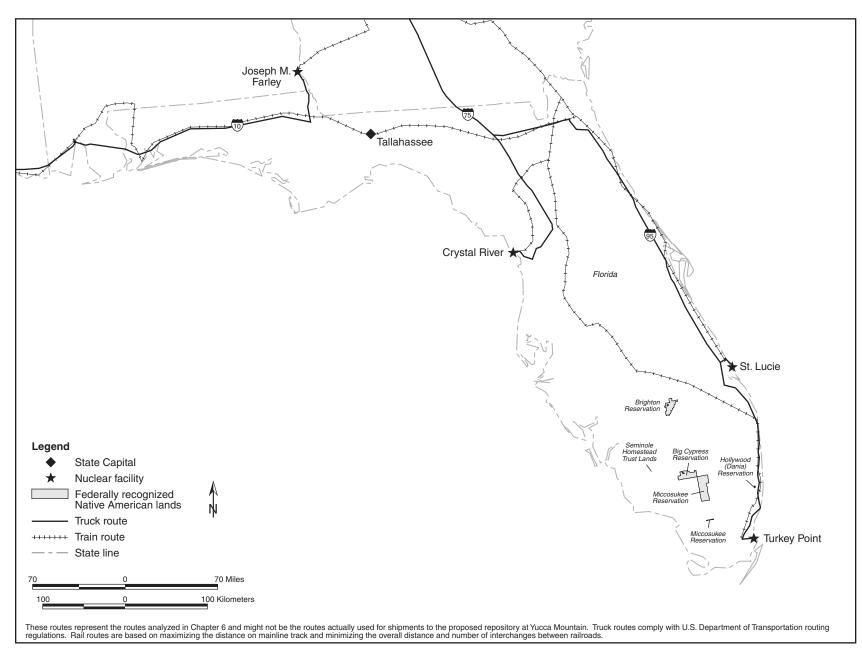


Figure J-38. Highway and rail routes used to analyze transportation impacts - Florida.

Table J-79. Estimated transportation impacts for the State of Iowa.

				Mos	tly rail		
	Mostly legal-weight						
Impact category	truck	Caliente ^b	Dry Lake ^c	Jean ^d	Beowawe ^e	Eccles ^f	Apex ^g
IOWA							
Shipments							
Truck (originating/total)	324/40,539	0/1,079	0/1,079	0/1,079	0/1,079	0/1,079	0/1,079
Rail (originating/total)	0/0	57/3,301	57/3,301	57/3,301	57/3,301	57/3,301	57/3,301
Radiological impacts							
Incident-free impacts							
Population (person-rem/LCFs) ^h	$2.7 \times 10^{2} / 1.4 \times 10^{-1}$	$6.2 \times 10^{1}/3.1 \times 10^{-2}$	$6.2 \times 10^{1} / 3.1 \times 10^{-2}$	$6.0 \times 10^{1} / 3.0 \times 10^{-2}$	$6.2 \times 10^{1}/3.1 \times 10^{-2}$	$6.2 \times 10^{1} / 3.1 \times 10^{-2}$	$6.2 \times 10^{1} / 3.1 \times 10^{-2}$
Workers (person-rem/LCFs)	$8.7 \times 10^2 / 3.5 \times 10^{-1}$	$1.4 \times 10^{2} / 5.7 \times 10^{-2}$	$1.4 \times 10^{2} / 5.7 \times 10^{-2}$	$1.3 \times 10^{2} / 5.4 \times 10^{-2}$	$1.4 \times 10^{2} / 5.7 \times 10^{-2}$	$1.4 \times 10^{2} / 5.7 \times 10^{-2}$	$1.4 \times 10^{2} / 5.7 \times 10^{-2}$
Accident dose risk							
Population (person-rem/LCFs)	$4.2 \times 10^{-3} / 2.1 \times 10^{-6}$	$5.8 \times 10^{-2} / 2.9 \times 10^{-5}$	$5.8 \times 10^{-2} / 2.9 \times 10^{-5}$	$5.4\times10^{-2}/2.7\times10^{-5}$	$5.8 \times 10^{-2} / 2.9 \times 10^{-5}$	$5.8 \times 10^{-2} / 2.9 \times 10^{-5}$	$5.8 \times 10^{-2} / 2.9 \times 10^{-5}$
Nonradiological impacts							
Vehicle emissions (LCFs)	1.4×10^{-2}	2.7×10 ⁻²	2.7×10 ⁻²	2.6×10^{-2}	2.7×10 ⁻²	2.7×10 ⁻²	2.7×10 ⁻²
Fatalities	0.25	0.09	0.09	0.09	0.09	0.09	0.09

- a. Under the mostly rail scenario, rail shipments would arrive in Nevada at one of six existing rail nodes. Impacts would vary according to the node. From that node, DOE would use one of the rail or heavy-haul implementing alternatives to complete the transportation to Yucca Mountain (see Section J.1.2).
- b. For heavy-haul truck transportation, the Caliente junction is the location of the proposed Caliente intermodal transfer station for heavy-haul trucks near the town of Caliente in eastern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on one of the Caliente, Caliente/Chalk Mountain, or Caliente/Las Vegas routes. For branch rail line transportation, railcars would transfer via the Caliente Option to the Caliente Corridor at the Caliente junction.
- c. For heavy-haul truck transportation, the Dry Lake junction is near the location of the proposed Apex/Dry Lake intermodal transfer station for heavy-haul trucks in southeast Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Apex/Dry Lake route.
- d. For heavy-haul truck transportation, the Jean junction is near the location of the proposed Sloan/Jean intermodal transfer station for heavy-haul trucks in southern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Sloan/Jean route. For branch rail line transportation, railcars would transfer from the mainline railroad via the Wilson Pass or Stateline Pass Option of the Jean Corridor, near the Jean junction.
- e. For branch rail line transportation, railcars would transfer from the mainline railroad at the Beowawe junction in north-central Nevada to the Carlin Corridor.
- f. For branch rail line transportation, railcars would transfer from the mainline railroad at the Eccles junction east of Caliente, Nevada, via the Eccles Option or nearby via the Crestline Option of the Caliente or Caliente-Chalk Mountain Corridor. Impacts in states outside Nevada would be the same for the Eccles and Crestline Options of the Caliente and Caliente-Chalk Mountain Corridors.
- g. For branch rail line transportation, railcars would transfer from the mainline railroad at the Apex junction in southeast Nevada, possibly via the Valley Connection, to the Valley Modified Corridor.
- h. LCF = latent cancer fatality.

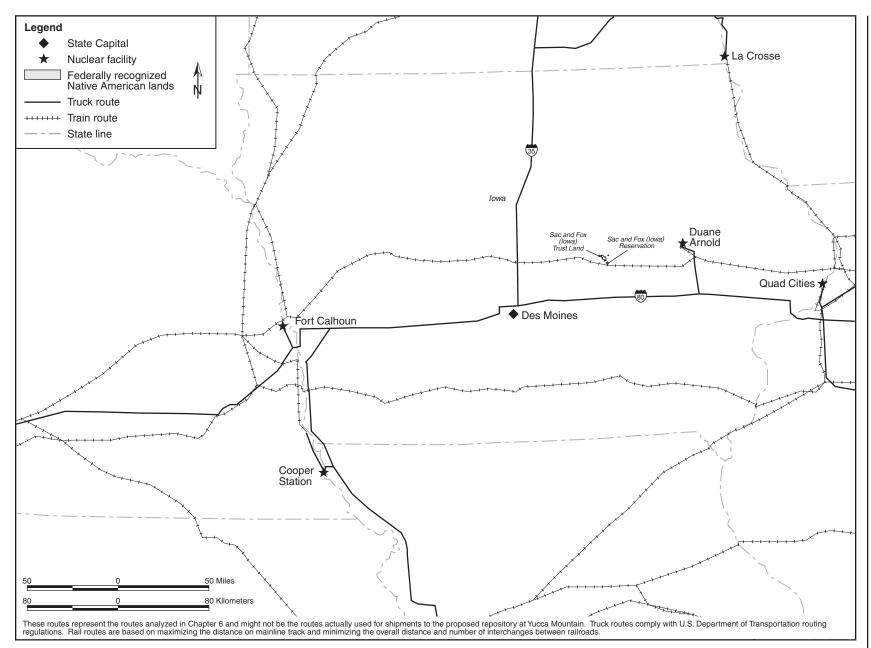


Figure J-39. Highway and rail routes used to analyze transportation impacts - Iowa.

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Table J-80. Estimated transportation impacts for the States of Idaho, Oregon, and Washington (page 1 of 2).

				Mostl	y rail				
	Mostly legal-weight	Ending rail node in Nevada ^a							
Impact category	truck	Caliente ^b	Dry Lake ^c	Jean ^d	Beowawe ^e	Eccles ^f	Apex ^g		
IDAHO									
Shipments									
Truck (originating/total)	1,088/4,412	0/0	0/0	0/0	0/0	0/0	0/0		
Rail (originating/total)	300/300	433/1,082	433/1,049	433/1,049	433/1,049	433/1,082	433/1,049		
Radiological impacts									
Incident-free impacts									
Population (person-rem/LCFs)h	$4.2 \times 10^{1} / 2.1 \times 10^{-2}$	$1.4 \times 10^{1} / 7.0 \times 10^{-3}$	$1.4 \times 10^{1} / 7.0 \times 10^{-3}$	$4.8 \times 10^{1} / 2.4 \times 10^{-2}$	$1.4 \times 10^{1} / 7.0 \times 10^{-3}$	$1.4 \times 10^{1} / 7.0 \times 10^{-3}$	$1.4 \times 10^{1} / 7.0 \times 10^{-3}$		
Workers (person-rem/LCFs)	$1.4 \times 10^2 / 5.5 \times 10^{-2}$	$4.7 \times 10^{1} / 1.9 \times 10^{-2}$	$4.7 \times 10^{1} / 1.9 \times 10^{-2}$	$1.7 \times 10^{2} / 6.8 \times 10^{-2}$	$4.7 \times 10^{1}/1.9 \times 10^{-2}$	$4.7 \times 10^{1} / 1.9 \times 10^{-2}$	$4.7 \times 10^{1} / 1.9 \times 10^{-2}$		
Accident dose risk									
Population (person-rem/LCFs)	$1.7 \times 10^{-3} / 8.7 \times 10^{-7}$	$7.9 \times 10^{-4} / 4.0 \times 10^{-7}$	$7.9 \times 10^{-4} / 4.0 \times 10^{-7}$	$2.4 \times 10^{-3} / 1.2 \times 10^{-6}$	$7.9 \times 10^{-4} / 4.0 \times 10^{-7}$	$7.9 \times 10^{-4} / 4.0 \times 10^{-7}$	$7.9 \times 10^{-4} / 4.0 \times 10^{-7}$		
Nonradiological impacts		2	2	2			2		
Vehicle emissions (LCFs)	5.2×10 ⁻³	4.2×10^{-3}	4.2×10^{-3}	8.0×10^{-3}	4.2×10 ⁻³	4.2×10 ⁻³	4.2×10 ⁻³		
Fatalities	0.018	0.039	0.039	0.048	0.039	0.039	0.039		
OREGON									
Shipments									
Truck (originating/total)	195/3,324	0/0	0/0	0/0	0/0	0/0	0/0		
Rail (originating/total)	0/0	33/649	33/649	33/649	33/649	33/649	33/649		
Radiological impacts									
Incident-free impacts									
Population (person-rem/LCFs) ^h	2.3×10 ¹ /1.2×10 ⁻²	$3.7 \times 10^{0} / 1.8 \times 10^{-3}$	$4.4 \times 10^{0} / 2.2 \times 10^{-3}$	$4.4 \times 10^{0} / 2.2 \times 10^{-3}$	$4.4 \times 10^{0} / 2.2 \times 10^{-3}$	$3.7 \times 10^{0} / 1.8 \times 10^{-3}$	$4.4\times10^{0}/2.2\times10^{-3}$		
Workers (person-rem/LCFs)	$7.9 \times 10^{1} / 3.2 \times 10^{-2}$	$1.8 \times 10^{1} / 7.3 \times 10^{-3}$	$1.8 \times 10^{1} / 7.2 \times 10^{-3}$	$1.8 \times 10^{1} / 7.2 \times 10^{-3}$	$1.8 \times 10^{1} / 7.2 \times 10^{-3}$	1.8×10 ¹ /7.3×10 ⁻³	$1.8 \times 10^{1} / 7.2 \times 10^{-3}$		
Accident dose risk	, ,	2 7	2	2			2		
Population (person-rem/LCFs)	$4.4 \times 10^{-4} / 2.2 \times 10^{-7}$	$1.7 \times 10^{-3} / 8.5 \times 10^{-7}$	$2.5 \times 10^{-3} / 1.2 \times 10^{-6}$	$2.5 \times 10^{-3} / 1.2 \times 10^{-6}$	$2.5 \times 10^{-3} / 1.2 \times 10^{-6}$	$1.7 \times 10^{-3} / 8.5 \times 10^{-7}$	2.5×10 ⁻³ /1.2×10 ⁻⁶		
Nonradiological impacts		3				2			
Vehicle emissions (LCFs)	1.5×10 ⁻³	1.7×10 ⁻³	2.1×10 ⁻³	2.1×10 ⁻³	2.1×10 ⁻³	1.7×10 ⁻³	2.1×10 ⁻³		
Fatalities	0.048	0.023	0.022	0.022	0.022	0.023	0.022		

Table J-80. Estimated transportation impacts for the States of Idaho, Oregon, and Washington (page 2 of 2).

			Mostly rail							
	Mostly legal-weight	Ending rail node in Nevada ^a								
Impact category	truck	Caliente ^b	Dry Lake ^c	Jean ^d	Beowawe ^e	Eccles ^d	Apex ^e			
WASHINGTON										
Shipments										
Truck (originating/total)	3,129/3,324	0/0	0/0	0/0	0/0	0/0	0/0			
Rail (originating/total)	0/0	616/616	616/616	616/616	616/616	616/616	616/616			
Radiological impacts										
Incident-free impacts										
Population (person-rem/LCFs) ^b	$9.7 \times 10^{0} / 4.9 \times 10^{-3}$	$1.1 \times 10^{1} / 5.7 \times 10^{-3}$	$1.1\times10^{1}/5.7\times10^{-3}$	$1.1 \times 10^{1} / 5.7 \times 10^{-3}$	$1.1\times10^{1}/5.7\times10^{-3}$	$1.1\times10^{1}/5.7\times10^{-3}$	1.1×10 ¹ /5.7×10 ⁻³			
Workers (person-rem/LCFs)	$7.6 \times 10^{1} / 3.0 \times 10^{-2}$	$3.2 \times 10^{1} / 1.3 \times 10^{-2}$	$3.2\times10^{1}/1.3\times10^{-2}$	$3.2\times10^{1}/1.3\times10^{-2}$	$3.2\times10^{1}/1.3\times10^{-2}$	$3.2 \times 10^{1} / 1.3 \times 10^{-2}$	3.2×10 ¹ /1.3×10 ⁻²			
Accident dose risk										
Population (person-rem/LCFs)	$8.8 \times 10^{-4} / 4.4 \times 10^{-7}$	$6.7 \times 10^{-4} / 3.4 \times 10^{-7}$								
Nonradiological impacts										
Vehicle emissions (LCFs)	2.7×10 ⁻³	2.2×10 ⁻³	2.2×10^{-3}	2.2×10 ⁻³	2.2×10^{-3}	2.2×10 ⁻³	2.2×10^{-3}			
Fatalities	0.001	0.005	0.005	0.005	0.005	0.005	0.005			

- a. Under the mostly rail scenario, rail shipments would arrive in Nevada at one of six existing rail nodes. Impacts would vary according to the node. From that node, DOE would use one of the rail or heavy-haul implementing alternatives to complete the transportation to Yucca Mountain (see Section J.1.2).
- b. For heavy-haul truck transportation, the Caliente junction is the location of the proposed Caliente intermodal transfer station for heavy-haul trucks near the town of Caliente in eastern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on one of the Caliente, Caliente/Chalk Mountain, or Caliente/Las Vegas routes. For branch rail line transportation, railcars would transfer via the Caliente Option to the Caliente Corridor at the Caliente junction.
- c. For heavy-haul truck transportation, the Dry Lake junction is near the location of the proposed Apex/Dry Lake intermodal transfer station for heavy-haul trucks in southeast Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Apex/Dry Lake route.
- d. For heavy-haul truck transportation, the Jean junction is near the location of the proposed Sloan/Jean intermodal transfer station for heavy-haul trucks in southern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Sloan/Jean route. For branch rail line transportation, railcars would transfer from the mainline railroad via the Wilson Pass or Stateline Pass Option of the Jean Corridor, near the Jean junction.
- e. For branch rail line transportation, railcars would transfer from the mainline railroad at the Beowawe junction in north-central Nevada to the Carlin Corridor.
- f. For branch rail line transportation, railcars would transfer from the mainline railroad at the Eccles junction east of Caliente, Nevada, via the Eccles Option or nearby via the Crestline Option of the Caliente or Caliente-Chalk Mountain Corridor. Impacts in states outside Nevada would be the same for the Eccles and Crestline Options of the Caliente and Caliente-Chalk Mountain Corridors.
- g. For branch rail line transportation, railcars would transfer from the mainline railroad at the Apex junction in southeast Nevada, possibly via the Valley Connection, to the Valley Modified Corridor.
- h. LCF = latent cancer fatality.

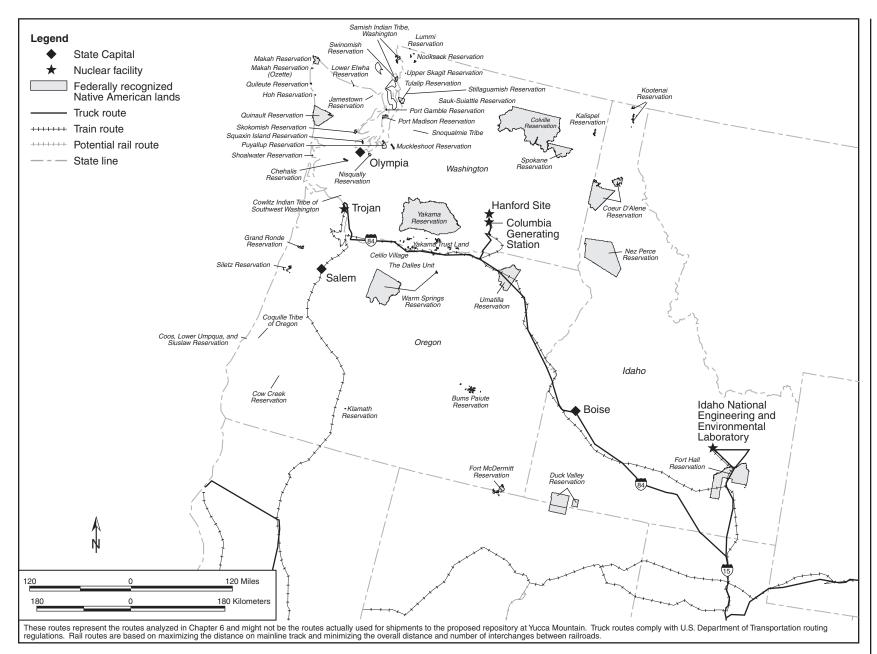


Figure J-40. Highway and rail routes used to analyze transportation impacts - Idaho, Oregon, and Washington.

Table J-81. Estimated transportation impacts for the States of Indiana, Michigan, and Ohio (page 1 of 2).

Impact category true	3 0/580 0/5,980 6.0×10 ⁻² 5.5×10 ¹ /. 9.9×10 ⁻² 8.1×10 ¹ /. 4.4×10 ⁻⁶ 2.4×10 ⁻² / 2.6×10 ⁻² 0.12	0/580 0/5,980 /2.7×10 ⁻² 5.5×10 ¹ /, /3.2×10 ⁻² 8.1×10 ¹ /, ² /1.2×10 ⁻⁵ 2.4×10 ⁻² /, 2 2.6×10 ⁻² 0.12	0/580 0/5,778 2.7×10 ⁻² 5.4×10 ¹ / ₂ 3.2×10 ⁻² 7.9×10 ¹ / ₂ (1.2×10 ⁻⁵ 2.3×10 ⁻² / ₂	3.2×10^{-2} $8.1 \times 10^{1}/3.$ 1.2×10^{-5} $2.4 \times 10^{-2}/1.$	0/580 0/5,980 7×10 ⁻² 5.5×10 ¹ /2.7×1 2×10 ⁻² 8.1×10 ¹ /3.2×1	0^{-2} 8.1×10 ¹ /3.2×10 ⁻²
Impact category tru INDIANA Shipments Truck (originating/total) 0/17,258 Rail (originating/total) 0/0 Radiological impacts Incident-free impacts Population (person-rem/LCFs) 1.2×10²/ Workers (person-rem/LCFs) 2.5×10²/ Accident dose risk Population (person-rem/LCFs) 8.8×10³/ Nonradiological impacts Vehicle emissions (LCFs) 2.5×10²/ Fatalities 0.05 MICHIGAN Shipments Truck (originating/total) 1,728/1,7 Rail (originating/total) 0/0 Radiological impacts Incident-free impacts Population (person-rem/LCFs) 4.9×10¹/ Workers (person-rem/LCFs) 4.9×10¹/ Accident dose risk Population (person-rem/LCFs) 4.9×10¹/ Norradiological impacts Vehicle emissions (LCFs) 1.4×10³/ Fatalities 0.006	3 0/580 0/5,980 0/5,980 $0/5,980$	0/580 0/5,980 /2.7×10 ⁻² 5.5×10 ¹ /, /3.2×10 ⁻² 8.1×10 ¹ /, ² /1.2×10 ⁻⁵ 2.4×10 ⁻² / 2 2.6×10 ⁻² 0.12	0/580 0/5,778 2.7×10 ⁻² 5.4×10 ¹ / ₂ 3.2×10 ⁻² 7.9×10 ¹ / ₂ /1.2×10 ⁻⁵ 2.3×10 ⁻² / 2.6×10 ⁻² 0.12	$0/580 0/5,980$ $2.7 \times 10^{-2} 3.2 \times 10^{-2} 4.1 \times 10^{1}/3.$ $2.4 \times 10^{-2}/1.$ $2.6 \times 10^{-2} 0.12$	0/580 0/5,980 7×10 ⁻² 5.5×10 ¹ /2.7×1 2×10 ⁻² 8.1×10 ¹ /3.2×1 .2×10 ⁻⁵ 2.4×10 ⁻² /1.2×1 2.6×10 ⁻² 0.12	0/580 0/5,980 0°2 5.5×10¹/2.7×10² 0°2 8.1×10¹/3.2×10² 10°5 2.4×10²/1.2×10°5 2.6×10°2 0.12
Shipments Truck (originating/total) Rail (originating/total) Radiological impacts Incident-free impacts Population (person-rem/LCFs) Accident dose risk Population (person-rem/LCFs) Nonradiological impacts Vehicle emissions (LCFs) Truck (originating/total) Rail (originating/total) Rail (originating/total) Rail (originating/total) Rail (originating/total) Rail (originating/total) Radiological impacts Incident-free impacts Population (person-rem/LCFs) Accident dose risk Population (person-rem/LCFs) Accident dose risk Population (person-rem/LCFs) Nonradiological impacts Vehicle emissions (LCFs) 1.4×10 ⁻³ Nonradiological impacts Vehicle emissions (LCFs) 1.4×10 ⁻³ Shipments Vehicle emissions (LCFs) 1.4×10 ⁻³ Shornadiological impacts Vehicle emissions (LCFs) 1.4×10 ⁻³ Stallities	$ \begin{array}{cccc} 0/5,980 \\ 6.0 \times 10^{-2} & 5.5 \times 10^{1} / \\ 9.9 \times 10^{-2} & 8.1 \times 10^{1} / \\ 4.4 \times 10^{-6} & 2.4 \times 10^{-2} / \\ & & & & & \\ 2.6 \times 10^{-2} & 0.12 \end{array} $	0/5,980 /2.7×10 ⁻² 5.5×10 ¹ /. /3.2×10 ⁻² 8.1×10 ¹ /. ² /1.2×10 ⁻⁵ 2.4×10 ⁻² / 2.6×10 ⁻² 0.12 0/0	0/5,778 2.7×10 ⁻² 3.2×10 ⁻² 7.9×10 ¹ / ₂ 7.2×10 ⁻⁵ 2.6×10 ⁻² 0.12	$0/5,980$ 2.7×10^{-2} 3.2×10^{-2} $8.1 \times 10^{1}/3$ $2.4 \times 10^{-2}/1$ 2.6×10^{-2} 0.12	0/5,980 .7×10 ⁻² 5.5×10 ¹ /2.7×1 2×10 ⁻² 8.1×10 ¹ /3.2×1 .2×10 ⁻⁵ 2.4×10 ⁻² /1.2×1 2.6×10 ⁻² 0.12	0/5,980 $0^{\circ 2}$ 5.5×10 ¹ /2.7×10 ⁻² $0^{\circ 2}$ 8.1×10 ¹ /3.2×10 ⁻² $10^{\circ 5}$ 2.4×10 ⁻² /1.2×10 ⁻⁵ 2.6×10 ⁻² 0.12
Truck (originating/total) 0/17,258 Rail (originating/total) 0/0 Radiological impacts Incident-free impacts Population (person-rem/LCFs) 1.2×10²/ Workers (person-rem/LCFs) 2.5×10²/ Accident dose risk Population (person-rem/LCFs) 8.8×10³/ Nonradiological impacts Vehicle emissions (LCFs) 2.5×10²/ Fatalities 0.05 MICHIGAN Shipments Truck (originating/total) 1,728/1,′ Rail (originating/total) 0/0 Radiological impacts Incident-free impacts Population (person-rem/LCFs) 4.9×10¹/ Workers (person-rem/LCFs) 4.9×10¹/ Accident dose risk Population (person-rem/LCFs) 6.0×10⁴/ Nonradiological impacts Vehicle emissions (LCFs) 1.4×10³/ Fatalities 0.006	$ \begin{array}{cccc} 0/5,980 \\ 6.0 \times 10^{-2} & 5.5 \times 10^{1} / \\ 9.9 \times 10^{-2} & 8.1 \times 10^{1} / \\ 4.4 \times 10^{-6} & 2.4 \times 10^{-2} / \\ & & & & & \\ 2.6 \times 10^{-2} & 0.12 \end{array} $	0/5,980 /2.7×10 ⁻² 5.5×10 ¹ /. /3.2×10 ⁻² 8.1×10 ¹ /. ² /1.2×10 ⁻⁵ 2.4×10 ⁻² / 2.6×10 ⁻² 0.12 0/0	0/5,778 2.7×10 ⁻² 3.2×10 ⁻² 7.9×10 ¹ / ₂ 7.2×10 ⁻⁵ 2.6×10 ⁻² 0.12	$0/5,980$ 2.7×10^{-2} 3.2×10^{-2} $8.1 \times 10^{1}/3$ $2.4 \times 10^{-2}/1$ 2.6×10^{-2} 0.12	0/5,980 .7×10 ⁻² 5.5×10 ¹ /2.7×1 2×10 ⁻² 8.1×10 ¹ /3.2×1 .2×10 ⁻⁵ 2.4×10 ⁻² /1.2×1 2.6×10 ⁻² 0.12	0/5,980 $0^{\circ 2}$ 5.5×10 ¹ /2.7×10 ⁻² $0^{\circ 2}$ 8.1×10 ¹ /3.2×10 ⁻² $10^{\circ 5}$ 2.4×10 ⁻² /1.2×10 ⁻⁵ 2.6×10 ⁻² 0.12
Rail (originating/total) Radiological impacts Incident-free impacts Population (person-rem/LCFs) Accident dose risk Population (person-rem/LCFs) Accident dose risk Population (person-rem/LCFs) Nonradiological impacts Vehicle emissions (LCFs) Fatalities MICHIGAN Shipments Truck (originating/total) Rail (originating/total) Royalli (originating/total) Royalli (originating/total) Royalli (originating/total) Royalli (originating/total) Royalli (originating/total) Rail (originating/total) Rail (originating/total) Rail (originating/total) Rail (originating/total) Rail (originating/total) Rail (originating/total) Royalli (originating/total) Rail (originating/total)	$ \begin{array}{cccc} 0/5,980 \\ 6.0 \times 10^{-2} & 5.5 \times 10^{1} / \\ 9.9 \times 10^{-2} & 8.1 \times 10^{1} / \\ 4.4 \times 10^{-6} & 2.4 \times 10^{-2} / \\ & & & & & \\ 2.6 \times 10^{-2} & 0.12 \end{array} $	0/5,980 /2.7×10 ⁻² 5.5×10 ¹ /. /3.2×10 ⁻² 8.1×10 ¹ /. ² /1.2×10 ⁻⁵ 2.4×10 ⁻² / 2.6×10 ⁻² 0.12 0/0	0/5,778 2.7×10 ⁻² 3.2×10 ⁻² 7.9×10 ¹ / ₂ 7.2×10 ⁻⁵ 2.6×10 ⁻² 0.12	$0/5,980$ 2.7×10^{-2} 3.2×10^{-2} $8.1 \times 10^{1}/3$ $2.4 \times 10^{-2}/1$ 2.6×10^{-2} 0.12	0/5,980 .7×10 ⁻² 5.5×10 ¹ /2.7×1 2×10 ⁻² 8.1×10 ¹ /3.2×1 .2×10 ⁻⁵ 2.4×10 ⁻² /1.2×1 2.6×10 ⁻² 0.12	0/5,980 $0^{\circ 2}$ 5.5×10 ¹ /2.7×10 ⁻² $0^{\circ 2}$ 8.1×10 ¹ /3.2×10 ⁻² $10^{\circ 5}$ 2.4×10 ⁻² /1.2×10 ⁻⁵ 2.6×10 ⁻² 0.12
Radiological impacts Incident-free impacts Population (person-rem/LCFs) Accident dose risk Population (person-rem/LCFs) Nonradiological impacts Vehicle emissions (LCFs) Truck (originating/total) Rail (originating/total) Rail (originating/total) Royalation (person-rem/LCFs) Workers (person-rem/LCFs) Accident dose risk Population (person-rem/LCFs) Workers (person-rem/LCFs) Accident dose risk Population (person-rem/LCFs) Accident dose risk Population (person-rem/LCFs) Accident dose risk Population (person-rem/LCFs) Nonradiological impacts Vehicle emissions (LCFs) Fatalities 1.4×10 ⁻³ 1.4×10 ⁻³ 1.4×10 ⁻³ Fatalities	76.0×10 ⁻² 5.5×10 ¹ /. 9.9×10 ⁻² 8.1×10 ¹ /. 74.4×10 ⁻⁶ 2.4×10 ⁻² 2.6×10 ⁻² 0.12	/2.7×10 ⁻² 5.5×10 ¹ /, /3.2×10 ⁻² 8.1×10 ¹ /, -2/1.2×10 ⁻⁵ 2.4×10 ⁻² / 2.6×10 ⁻² 0.12 0/0	2.7×10 ² 5.4×10 ¹ / ₂ 3.2×10 ² 7.9×10 ¹ / ₂ /1.2×10 ⁻⁵ 2.3×10 ⁻² / 2.6×10 ⁻² 0.12	$\begin{array}{cccc} 2.7 \times 10^{-2} & 5.5 \times 10^{1} / 2. \\ 3.2 \times 10^{-2} & 8.1 \times 10^{1} / 3. \\ /1.2 \times 10^{-5} & 2.4 \times 10^{-2} / 1. \\ & & & & & & \\ & & & & & & \\ & & & & &$	$ \begin{array}{rcl} .7 \times 10^{-2} & 5.5 \times 10^{1} / 2.7 \times 1 \\ .2 \times 10^{-2} & 8.1 \times 10^{1} / 3.2 \times 1 \\ .2 \times 10^{-5} & 2.4 \times 10^{-2} / 1.2 \times 1 \\ & 2.6 \times 10^{-2} \\ & 0.12 \end{array} $	$0^{2} 5.5 \times 10^{1} / 2.7 \times 10^{2} $ $0^{2} 8.1 \times 10^{1} / 3.2 \times 10^{2} $ $10^{5} 2.4 \times 10^{2} / 1.2 \times 10^{5} $ $2.6 \times 10^{2} $ 0.12 $0/0$
Radiological impacts Incident-free impacts Population (person-rem/LCFs) Accident dose risk Population (person-rem/LCFs) Nonradiological impacts Vehicle emissions (LCFs) Truck (originating/total) Rail (originating/total) Rail (originating/total) Royalation (person-rem/LCFs) Workers (person-rem/LCFs) Accident dose risk Population (person-rem/LCFs) Workers (person-rem/LCFs) Accident dose risk Population (person-rem/LCFs) Accident dose risk Population (person-rem/LCFs) Accident dose risk Population (person-rem/LCFs) Nonradiological impacts Vehicle emissions (LCFs) Fatalities 1.4×10 ⁻³ 1.4×10 ⁻³ 1.4×10 ⁻³ Fatalities	9.9×10 ⁻² 8.1×10 ¹ /. 4.4×10 ⁻⁶ 2.4×10 ⁻² / 2.6×10 ⁻² 0.12 728 0/0	/3.2×10 ⁻² 8.1×10 ¹ /. 2.1×10 ⁻⁵ 2.4×10 ⁻² / 2.6×10 ⁻² 0.12 0/0	3.2×10 ² 7.9×10 ¹ / ₂ 7.2×10 ⁻⁵ 2.3×10 ⁻² / 2.6×10 ⁻² 0.12 0/0	3.2×10^{2} $8.1 \times 10^{1}/3.$ 71.2×10^{-5} $2.4 \times 10^{-2}/1.$ 2.6×10^{-2} 0.12	2×10 ⁻² 8.1×10 ¹ /3.2×1 .2×10 ⁻⁵ 2.4×10 ⁻² /1.2×1 2.6×10 ⁻² 0.12 0/0	0° 8.1×10°/3.2×10° 10° 2.4×10°²/1.2×10° 2.6×10°² 0.12
Incident-free impacts	9.9×10 ⁻² 8.1×10 ¹ /. 4.4×10 ⁻⁶ 2.4×10 ⁻² / 2.6×10 ⁻² 0.12 728 0/0	/3.2×10 ⁻² 8.1×10 ¹ /. 2.1×10 ⁻⁵ 2.4×10 ⁻² / 2.6×10 ⁻² 0.12 0/0	3.2×10 ² 7.9×10 ¹ / ₂ 7.2×10 ⁻⁵ 2.3×10 ⁻² / 2.6×10 ⁻² 0.12 0/0	3.2×10^{2} $8.1 \times 10^{1}/3.$ 71.2×10^{-5} $2.4 \times 10^{-2}/1.$ 2.6×10^{-2} 0.12	2×10 ⁻² 8.1×10 ¹ /3.2×1 .2×10 ⁻⁵ 2.4×10 ⁻² /1.2×1 2.6×10 ⁻² 0.12 0/0	0° 8.1×10°/3.2×10° 10° 2.4×10°²/1.2×10° 2.6×10°² 0.12
Population (person-rem/LCFs)	9.9×10 ⁻² 8.1×10 ¹ /. 4.4×10 ⁻⁶ 2.4×10 ⁻² / 2.6×10 ⁻² 0.12 728 0/0	/3.2×10 ⁻² 8.1×10 ¹ /. 2.1×10 ⁻⁵ 2.4×10 ⁻² / 2.6×10 ⁻² 0.12 0/0	3.2×10 ² 7.9×10 ¹ / ₂ 7.2×10 ⁻⁵ 2.3×10 ⁻² / 2.6×10 ⁻² 0.12 0/0	3.2×10^{2} $8.1 \times 10^{1}/3.$ 71.2×10^{-5} $2.4 \times 10^{-2}/1.$ 2.6×10^{-2} 0.12	2×10 ⁻² 8.1×10 ¹ /3.2×1 .2×10 ⁻⁵ 2.4×10 ⁻² /1.2×1 2.6×10 ⁻² 0.12 0/0	0° 8.1×10°/3.2×10° 10° 2.4×10°²/1.2×10° 2.6×10°² 0.12
Workers (person-rem/LCFs) Accident dose risk Population (person-rem/LCFs) Nonradiological impacts Vehicle emissions (LCFs) Fatalities MICHIGAN Shipments Truck (originating/total) Rail (originating/total) Rail (originating/total) Rail (originating/total) Radiological impacts Incident-free impacts Population (person-rem/LCFs) Accident dose risk Population (person-rem/LCFs) Accident dose risk Population (person-rem/LCFs) Norradiological impacts Vehicle emissions (LCFs) Fatalities 2.5×10²/ 8.8×10³/ 9/0 1,728/1, 1	74.4×10 ⁻⁶ 2.4×10 ⁻² 2.6×10 ⁻² 0.12	2.4×10 ⁻⁵ 2.4×10 ⁻² 2.6×10 ⁻² 2.6×10 ⁻² 0.12	71.2×10 ⁻⁵ 2.3×10 ⁻² / 2.6×10 ⁻² 0.12	71.2×10 ⁻⁵ 2.4×10 ⁻² /1. 2.6×10 ⁻² 0.12 0/0	2.4×10 ⁻⁵ 2.4×10 ⁻² /1.2×1 2.6×10 ⁻² 0.12 0/0	2.4×10 ⁻² /1.2×10 ⁻⁵ 2.6×10 ⁻² 0.12
Accident dose risk Population (person-rem/LCFs) Nonradiological impacts Vehicle emissions (LCFs) Fatalities MICHIGAN Shipments Truck (originating/total) Rail (originating/total) Rail (originating/total) Rail (originating/total) Radiological impacts Incident-free impacts Population (person-rem/LCFs) Accident dose risk Population (person-rem/LCFs) Accident dose risk Population (person-rem/LCFs) Nonradiological impacts Vehicle emissions (LCFs) Fatalities 8.8×10 ⁻³ 8.8×10 ⁻³ 9.006	74.4×10 ⁻⁶ 2.4×10 ⁻² 2.6×10 ⁻² 0.12	² /1.2×10 ⁻⁵ 2.4×10 ⁻² ² 2.6×10 ⁻² 0.12	2.6×10 ⁻² 0.12	2.6×10 ⁻² 0.12	2.4×10 ⁻⁵ 2.4×10 ⁻² /1.2×1 2.6×10 ⁻² 0.12 0/0	2.4×10 ⁻² /1.2×10 ⁻⁵ 2.6×10 ⁻² 0.12
Population (person-rem/LCFs)	2.6×10 ⁻² 0.12	2.6×10 ⁻² 0.12	2.6×10 ⁻² 0.12	2.6×10 ⁻² 0.12	2.6×10 ⁻² 0.12	2.6×10 ⁻² 0.12
Nonradiological impacts Vehicle emissions (LCFs) Fatalities MICHIGAN Shipments Truck (originating/total) Rail (originating/total) Roil (originat	2.6×10 ⁻² 0.12	2.6×10 ⁻² 0.12	2.6×10 ⁻² 0.12	2.6×10 ⁻² 0.12	2.6×10 ⁻² 0.12	2.6×10 ⁻² 0.12
Vehicle emissions (LCFs) Fatalities 0.05 MICHIGAN Shipments Truck (originating/total) Rail (originating/total) Royal (originating/t	0.12 728 0/0	0.12	0.12	0.12	0.12	0.12
Fatalities 0.05 MICHIGAN Shipments Truck (originating/total) 1,728/1,′ Rail (originating/total) 0/0 Radiological impacts Incident-free impacts Population (person-rem/LCFs) ^h 8.7×10 ⁰ / Workers (person-rem/LCFs) 4.9×10 ¹ / Accident dose risk Population (person-rem/LCFs) 6.0×10 ⁴ / Nonradiological impacts Vehicle emissions (LCFs) 1.4×10 ⁻³ Fatalities 0.006	0.12 728 0/0	0.12	0.12	0.12	0.12	0.12
MICHIGAN Shipments Truck (originating/total) 1,728/1,′ Rail (originating/total) 0/0 Radiological impacts Incident-free impacts Population (person-rem/LCFs) 4.9×10¹/ Workers (person-rem/LCFs) 4.9×10¹/ Accident dose risk Population (person-rem/LCFs) 6.0×10²/ Nonradiological impacts Vehicle emissions (LCFs) 1.4×10⁻³ Fatalities 0.006	728 0/0	0/0	0/0	0/0	0/0	0/0
Shipments Truck (originating/total) 1,728/1,′ Rail (originating/total) 0/0 Radiological impacts Incident-free impacts Population (person-rem/LCFs) ^h 8.7×10 ⁰ / Workers (person-rem/LCFs) 4.9×10 ¹ / Accident dose risk Population (person-rem/LCFs) 6.0×10 ⁴ / Nonradiological impacts Vehicle emissions (LCFs) 1.4×10 ⁻³ Fatalities 0.006						
Truck (originating/total) 1,728/1,7 Rail (originating/total) 0/0 Radiological impacts Incident-free impacts Population (person-rem/LCFs) ^h 4.9×10 ¹ / Workers (person-rem/LCFs) 4.9×10 ¹ / Accident dose risk Population (person-rem/LCFs) 6.0×10 ⁴ / Nonradiological impacts Vehicle emissions (LCFs) 1.4×10 ⁻³ Fatalities 0.006						
Rail (originating/total) 0/0 Radiological impacts Incident-free impacts Population (person-rem/LCFs) ^h 8.7×10 ⁰ / Workers (person-rem/LCFs) 4.9×10 ¹ / Accident dose risk Population (person-rem/LCFs) 6.0×10 ⁻⁴ / Nonradiological impacts Vehicle emissions (LCFs) 1.4×10 ⁻³ Fatalities 0.006						
Radiological impacts Incident-free impacts Population (person-rem/LCFs) ^h Workers (person-rem/LCFs) Accident dose risk Population (person-rem/LCFs) Nonradiological impacts Vehicle emissions (LCFs) Fatalities 1.4×10 ⁻³	28//28/	28//28/	28//28/	28//28/	28//28/	28//28/
Incident-free impacts Population (person-rem/LCFs) ^h Workers (person-rem/LCFs) Accident dose risk Population (person-rem/LCFs) Nonradiological impacts Vehicle emissions (LCFs) Fatalities 8.7×10 ⁰ / 4.9×10 ¹ / 6.0×10 ⁴ / 7.1×10 ³ / 7.1×10 ³ / 8.7×10 ⁰ / 1.4×10 ³ / 8.7×10 ⁰ / 1.4×10 ³ / 9.006						
Population (person-rem/LCFs)h 8.7×10°/ Workers (person-rem/LCFs) 4.9×10¹/ 4.9×10¹/ 4.9×10¹/ 4.9×10¹/ 4.9×10¹/ 4.9×10¹/ 4.9×10¹/ 4.9×10¹/ 4.9×10¹/ 4.9×10¹/ 4.9×10¹/ 4.9×10¹/ 4.9×10¹/ 4.9×10¹/ 4.9×10¹/ 4.9×10¹/ 4.9×10²/ 4.9×						
Workers (person-rem/LCFs) 4.9×10 ¹ / Accident dose risk Population (person-rem/LCFs) 6.0×10 ⁴ / Nonradiological impacts Vehicle emissions (LCFs) 1.4×10 ⁻³ Fatalities 0.006	42 103 47 100	10.4.10.3.4.7.1004	2 4 10-3 4 7 100 %	24 103 47 1002	4 10-3 4 7 100/0 4 1	0-3 4.7 1000 4 10-3
Accident dose risk Population (person-rem/LCFs) Nonradiological impacts Vehicle emissions (LCFs) Fatalities 0.006						
Population (person-rem/LCFs) 6.0×10^{-4} Nonradiological impacts Vehicle emissions (LCFs) 1.4×10^{-3} Fatalities 0.006	2.0×10 ⁻² 1.7×10 ⁻⁷	$/6.7 \times 10^{-3}$ 1.7×10^{1}	6.7×10^{-3} 1.7×10^{1}	6.7×10^{-3} $1.7 \times 10^{1}/6.7$	$.7 \times 10^{-3}$ $1.7 \times 10^{1} / 6.7 \times 1$	0^{-3} $1.7 \times 10^{1} / 6.7 \times 10^{-3}$
Nonradiological impacts Vehicle emissions (LCFs) 1.4×10 ⁻³ Fatalities 0.006	7 2	, ,	6 2	6 3	4 3	6 2 6
Vehicle emissions (LCFs) 1.4×10 ⁻³ Fatalities 0.006	/3.0×10 ⁻⁷ 4.9×10 ⁻³ /	$^{3}/2.4\times10^{-6}$ $4.9\times10^{-3}/$	$/2.4 \times 10^{-6}$ 4.9×10^{-3}	$/2.4 \times 10^{-6}$ $4.9 \times 10^{-3}/2$	4.4×10^{-6} $4.9 \times 10^{-3} / 2.4 \times 10^{-3}$	10^{-6} $4.9 \times 10^{-3} / 2.4 \times 10^{-6}$
Fatalities 0.006	2	2	2	2	2	2
			1.6×10 ⁻³		1.6×10 ⁻³	1.6×10 ⁻³
OHIO	0.010	0.010	0.010	0.010	0.010	0.010
Shipments						
Truck (originating/total) 636/12,1	21 0/580	0/580	0/580	0/580	0/580	0/580
Rail (originating/total) 0/0	106/2,38	81 106/2,38	1 106/2,38	106/2,381	106/2,381	106/2,381
Radiological impacts	,- ,- ,- ,- ,- ,- ,- ,- ,- ,- ,- ,- ,- ,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	,	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	, , , , ,	, , , ,
Incident-free impacts						
Population (person-rem/LCFs) ^h 1.6×10 ² /	7 9×10 ⁻² 8 5×10 ¹ /	/4.3×10 ⁻² 8.5×10 ¹ /	4.3×10 ⁻² 8.5×10 ¹ /4	4.3×10^{-2} $8.5 \times 10^{1}/4$	3×10^{-2} 8.5×10 ¹ /4.3×1	0 ⁻² 8.5×10 ¹ /4.3×10 ⁻²
Workers (person-rem/LCFs) 3.2×10 ² /		$/3.6 \times 10^{-2}$ 9.1×10^{1}				
Accident dose risk	1.5.1.0).1X107.	.5.5.10).1X107.	J.1710 /c	J.171075.	7.17.10 /3.0XI	J.1710 /J.0710
Population (person-rem/LCFs) 7.7×10 ⁻³	/3 8×10-6 2 6×10-2	² /1.3×10 ⁻⁵ 2.6×10 ⁻² /	/1.3×10 ⁻⁵ 2.6×10 ⁻² /	/1.3×10 ⁻⁵ 2.6×10 ⁻² /1.	.3×10 ⁻⁵ 2.6×10 ⁻² /1.3×1	10 ⁻⁵ 2.6×10 ⁻² /1.3×10 ⁻⁵
Nonradiological impacts		/1.5A10 2.0A10 /	1.5/10 2.0/10 /	2.0010 /1.	.57.10 2.07.10 /1.57.1	2.0/10 /1.3/10
Vehicle emissions (LCFs) 3.1×10^{-2}	13.0×10 2.0X10 ;		3.9×10 ⁻²	3.9×10 ⁻²	3.9×10 ⁻²	3.9×10 ⁻²
Fatalities 0.04		2 3.9×10 ⁻²			0.08	0.08

a. Under the mostly rail scenario, rail shipments would arrive in Nevada at one of six existing rail nodes. Impacts would vary according to the node. From that node, DOE would use one of the rail or heavy-haul implementing alternatives to complete the transportation to Yucca Mountain (see Section J.1.2).

b. For heavy-haul truck transportation, the Caliente junction is the location of the proposed Caliente intermodal transfer station for heavy-haul trucks near the town of Caliente in eastern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on one of the Caliente, Caliente/Chalk Mountain, or Caliente/Las Vegas routes. For branch rail line transportation, railcars would transfer via the Caliente Option to the Caliente Corridor at the Caliente junction.

c. For heavy-haul truck transportation, the Dry Lake junction is near the location of the proposed Apex/Dry Lake intermodal transfer station for heavy-haul trucks in southeast Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Apex/Dry Lake route.

Table J-81. Estimated transportation impacts for the States of Indiana, Michigan, and Ohio (page 2 of 2).

- d. For heavy-haul truck transportation, the Jean junction is near the location of the proposed Sloan/Jean intermodal transfer station for heavy-haul trucks in southern Nevada. Rail shipments terminating at this junction would continue to Yucca Mountain on heavy-haul trucks on the Sloan/Jean route. For branch rail line transportation, railcars would transfer from the mainline railroad via the Wilson Pass or Stateline Pass Option of the Jean Corridor, near the Jean junction.
- e. For branch rail line transportation, railcars would transfer from the mainline railroad at the Beowawe junction in north-central Nevada to the Carlin Corridor.
- f. For branch rail line transportation, railcars would transfer from the mainline railroad at the Eccles junction east of Caliente, Nevada, via the Eccles Option or nearby via the Crestline Option of the Caliente or Caliente-Chalk Mountain Corridor. Impacts in states outside Nevada would be the same for the Eccles and Crestline Options of the Caliente and Caliente-Chalk Mountain Corridors.
- g. For branch rail line transportation, railcars would transfer from the mainline railroad at the Apex junction in southeast Nevada, possibly via the Valley Connection, to the Valley Modified Corridor.
- h. LCF = latent cancer fatality.

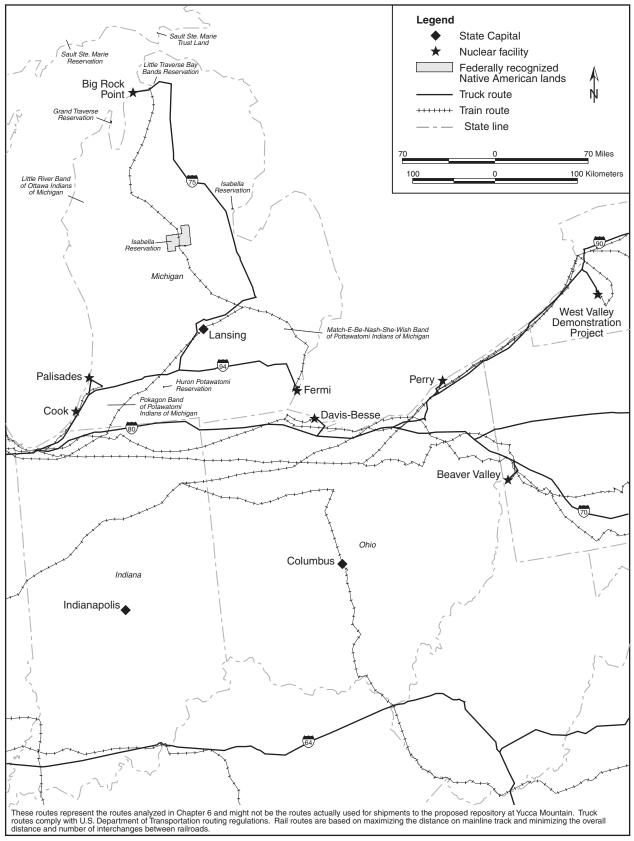


Figure J-41. Highway and rail routes used to analyze transportation impacts - Indiana, Michigan, and Ohio.